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FOREST MANAGEMENT UPDATE

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For Service Foresters & Consultants

MANAGING WHITE PINE PLANTATIONS IN THE CENTRAL HARDWOODS REGION

by Arlyn W. Perkey

During the past 25 years, many eastern white pine plantations have been established on abandoned farm land in the central hardwoods region where there is uncertainty about future markets for white pine. We should manage these plantations for the products most likely to provide the best return and gamble on market availability when the crop is ready for harvest. The most profitable product from these plantations will probably be high value softwood sawtimber. Consequently, a silvicultural strategy that emphasizes growing clear white pine on a short rotation makes good sense for private non-industrial landowners. This is especially true if a biomass market does not seem imminent.

Managing For High Value Products

Many white pine plantations were established on an 8x8 spacing, providing 681 trees per acre. Without biomass markets, many trees are lost as natural mortality, or they are removed noncommercially. In either case, they are an unnecessary management expense in many areas. Where the white pine weevil is not a problem and sawtimber production is the primary objective, a 10x10 spacing (435 trees/acre) is appropriate. This will reduce reforestation costs, minimize the cost of any precommercial thinnings, and foster rapid diameter growth on potential crop trees. On sites where hardwood invasion is not an immediate threat, a 12x12 spacing (302 trees/acre) may be used. Information from the southeast indicates this wider spacing will yield more short rotation sawtimber volume.

If production of high value sawtimber is the management objective, when should thinning and pruning be done? If the trees were planted on a 10x10 spacing, it is unlikely that precommercial thinning will be needed prior to pruning. After trees are pruned, they must be maintained in a free-to-grow condition by commercial or precommercial thinning. Crop trees should be pruned when dominance is first expressed and trees are tall enough to permit pruning while leaving a live crown on 50% of the tree height. Pruned branches will still be relatively small at that time, and crop tree diameters will be 5" to 8" dbh. On many sites,

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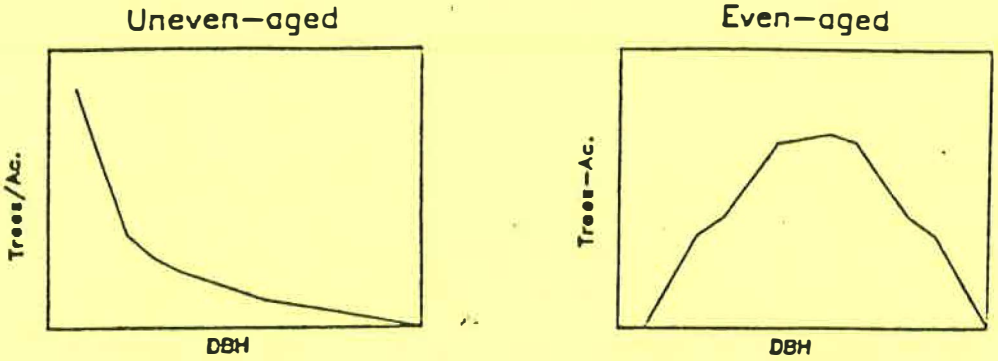
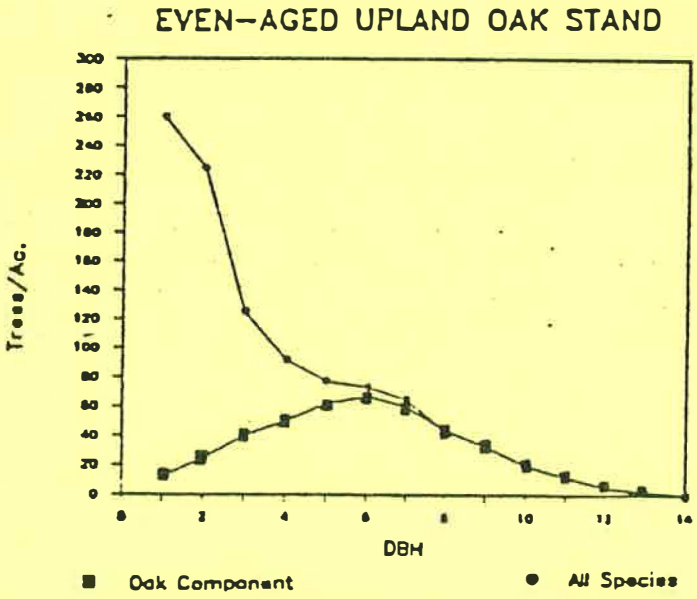
STAND STRUCTURE IN EVEN-AGED UPLAND OAK STANDS

By Arlyn W. Perkey

Many of us expect uneven-aged stands to have inverse J-shaped curves, and even-aged stands to have bell-shaped curves as follows:



Recent published observations in the Boston Mountains of Arkansas indicate the stand structure in our even-aged upland oak stands is more complex than we see above. The following graph depicts how many of our stands actually appear. While this published information is from Arkansas, I understand from Kurt Gottschalk (Northeastern Forest Experiment Station) that his data from Ohio and Pennsylvania confirms the existence of similar relationships in the central hardwoods region.



Just looking at the total number of trees per acre, we might describe this stand as being uneven-aged due to the shape of the curve (inverse J). However, what we really have is an even-aged oak component with a bell-shaped curve, and an invading understory in the smaller size classes. This understory consists of numerous stems of species like red maple, sugar maple, black gum, ironwood, dogwood, sourwood, etc. As the oak component ages, the total number of trees in the stand increases due to the proliferation of the understory. The intolerant oak overstory is being invaded by a tolerant understory. If that understory is not treated, it will probably become the new stand as the overstory is harvested or allowed to die.

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RECOMMENDATIONS TO ENCOURAGE SPROUTING AND TO THIN CLUMPS

How standing trees are cut can determine the success or failure to produce high-quality stems from subsequent clumps of sprouts. Two objectives can be considered:

1. encourage rapid regrowth from stumps of cut trees, and
2. encourage maximum growth of selected stems by thinning of the resulting sprout clumps.

To achieve these objectives, the following actions are recommended:

* To encourage sprouting, parent trees should be cut during the dormant season, i.e., from late fall to early spring, before bud break. This will insure sufficient time for sprouts to become hardy before fall frosts occur and a larger proportion of fast-growing sprouts will result than when a tree is cut just after full leaf expansion in the spring.

* Stumps should be cut with a saw as low as possible and bark damage should be avoided. The most healthy sprouts will originate at or below the ground line, because sprouts originating high on the stump are eventually susceptible to decay, wind throw and snow breakage.

* Recut high stumps closer to the ground to encourage more sprouts to develop from below the ground and to accelerate the healing-over of small stumps and decomposition of large stumps.

* Cut damaged or otherwise unsuitable advanced-growth during cleanings to produce desirable seedlings-sprouts.

* Thin clumps at an early age, preferably before the sprouts reach 20 years. If not thinned early, sprouts may become decayed through the advancing rot from dying companion sprouts. Moreover, severe competion amoung sprouts causes them to lean and become crooked.

* Favor best-formed, most widely-spaced, low-origin dominant or codominant sprouts with U-type connections between companion sprouts. V-type sprout connections should be treated as a unit -- either left or both cut.

* When selecting the best formed stems in a clump, particular attention should be paid to the branch stubs: their number, size and degree of healing affect greatly the future quality of the tree.

* Companion sprouts in U-type connections can be temporarily retained to protect the bole of the selected dominant against sunscald and development of epicormic branches.

* Provide maximum space for crown development which is important for fast growth of young sprouts.

The above recommendations are from Thinning Clumps of Northern Hardwood Stump Sprouts to Produce High Quality Timber, Forest Research Information Paper No. 104.

will start purchasing white pine for use as long fiber pulp. This new market will have a purchase radius of approximately 140 miles. Mead is adapting their landowner assistance program to accommodate this change in demand for local raw materials. Following is a brief explanation of the two assistance programs that relate to white pine plantation management.

Seedling Purchase Program

This program is available in 36 counties in southern Ohio. Mead purchases the seedlings and provides them free to the landowner with a stipulation that planting will be done only on suitable sites. Landowners are strongly encouraged to obtain and follow the advice of a service forester.

Plantation Management Assistance Program

With this new program, Mead will establish plantations on suitable old field sites with a lease agreement for a period of 35 years. Under the terms of the agreement, Mead has the option to purchase the timber at a competitive market price. Mead expects to harvest the majority of the stands when they are 25 to 30 years old. Plantations are established at a density of 900 trees/acre (about 6x8 spacing), with no plans for subsequent thinning. This assistance opportunity is available within a 50 mile radius of Chillicothe.

This example of planned biomass management gives an indication of the type of marketing opportunities that are available in one area, and may develop elsewhere in the future.

NOTE: The information contained in this article is from Purdue University's Indiana Forest Marketing and Wood Utilization Report, Bulletin No. 159, dated January 2, 1980; the Mead Corporation; the Wayne-Hoosier National Forest; Forestry Report R8-FR1; and my own observations.

RECOMMENDED PUBLISHED RESOURCES

The following white pine publications can be obtained from:

Bulletin No. 159
Forestry Extension Coordinator
Dept. of Forestry & Nat. Res.
Purdue University
West Lafayette, Indiana 47907

WHITE PINE MANAGEMENT A QUICK REVIEW.
NA-FR-27
Ken F. Lancaster
NA-State & Private Forestry
P. O. Box 640
Durham, New Hampshire 03824

Two new publications now available which may be of interest are:

RELEASING YOUNG HARDWOOD CROP TREES-USE OF A CHAIN SAW COSTS LESS THAN HERBICIDES. Res. Paper: NE-550
Gary W. Miller
USDA - Forest Service
Northeastern For. Exp. Station
Broomall, Pennsylvania 19008

FOREST MANAGEMENT GUIDELINES FOR CONTROLLING WILD GRAPEVINES
Res. Paper: NE-548
H. Clay Smith
USDA - Forest Service
Northeastern For. Exp. Station
Broomall, Pennsylvania 19008